REMARKS

By this Amendment, Applicants amend claims 1-4, 12-19, 21, 23, 25, 27-34, 42-55, 57-62, and 65, and add new claims 66-70 to protect additional aspects of the invention. Upon entry of this Amendment, claims 1-70 are pending.

In the final Office Action of May 24, 2004[1] ("OA"), (1) claims 1-15 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter; (2) claims 1, 3, 4, 13, 16, 18, 19, 28, 31, 33, 34, 43, 46, 48, 49, 58, and 61-65 were rejected under 35 U.S.C. § 102(b) as anticipated by the *Bank Marketing International* article entitled "Are your customers profitable?" ("*Bank Marketing*"); (3) claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Bank Marketing* in view of U.S. Patent No. 6,411,936 to *Sanders* and in further view of *Canfield, R.V.*, "Cost Optimization of periodic preventive maintenance," ("*Canfield*"); and (4) claims 7-12, 22-27, 37-42, and 52-57 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Bank Marketing* in view of *Canfield* and further in view of *Sanders*. Applicants address the rejections below.

[1] The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicants decline to automatically subscribe to any statement or characterization in the Office Action.

Rejection of claims 1-15 under 35 U.S.C. § 101

The Examiner alleged that the features of claims 1-15 "represent mere ideas in the abstract since they do not involve physical and/or computer means, or instructions embodied in a tangible medium to carry them out" (OA at 3). According to the Examiner, the claimed features are thus "not within the technological arts . . . and . . . therefore found to be non-statutory" (OA at 3).

Applicants do not agree with the Examiner's rejection of claims 1-15. The inquiry of whether a claim is statutory focuses on "the essential characteristics of the subject matter, in particular, its practical utility." *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375. According to the Federal Circuit, if a claim includes recitations that produce "a concrete, tangible and useful result," the claim is not abstract and has practical utility. *See State Street*, 149 F.3d at 1373, *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358. If the claim is not abstract and has practical utility it is statutory under 35 U.S.C. § 101. Applicants submit that claims 1-15 are drawn to a useful, concrete, and tangible result, and are therefore not abstract but, rather, statutory under 35 U.S.C. § 101.

Further, whether or not a process can be performed "without physical and/or computer means" is not dispositive of determining whether a claimed process is statutory. In fact, the Federal Circuit indicated that arguing that process claims are not patentable subject matter because they lack physical limitations "reflects a misunderstanding of...[the] case law." *AT&T*, F.3d at 1359.

Nonetheless, Applicants have amended the claims to expedite prosecution of this application. Claim 1, as currently presented, recites a method "performed by a processing system . . . ." Claim 1 therefore recites "physical and/or computer means . . . to carry out" the claimed method. Accordingly, claim 1 and its dependent claims 2-15 are clearly within the

technological arts. Applicants submit that claims 1-15 define statutory subject matter and therefore request withdrawal of the rejection under 35 U.S.C. § 101.

Rejection under 35 U.S.C. § 102(b)

Applicants traverse the rejection of claims 1, 3, 4, 13, 16, 18, 19, 28, 31, 33, 34, 43, 46, 48, 49, 58, and 61-65 because, as currently presented, these claims are not anticipated by *Bank Marketing*. In order to properly anticipate Applicants' claimed invention under 35 U.S.C. § 102(b), each and every element of the claim at issue must be found, either expressly described or under principles of inherency, in a single prior art reference. Further, "[t]he identical invention must be shown in as complete detail as is contained in the . . . claim[s]." *See* M.P.E.P. § 2131. Finally, "[t]he elements must be arranged as required by the claim." *Id.*

Claim 1 recites a combination of steps including:

> generating a hazard function for an existing customer, to determine probability of churn, based on . . . [a] hazard function model and account data associated with the customer and corresponding to the attributes . . . and
>
> calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort.

Bank Marketing fails to teach or suggest at least "generating a hazard function . . . ," as claimed. Although *Bank Marketing* discloses predicting "the length of time a customer is likely to stay with [a bank]," it does not teach or suggest "generating a hazard function for an existing customer . . . based on . . . [a] hazard function model and account data associated with the customer and corresponding to the attributes," as recited in claim 1.

Bank Marketing also fails to teach or suggest at least "calculating a gain in lifetime value based on a change in the hazard function . . . ," as recited in claim 1. *Bank Marketing* merely mentions, as the Examiner notes, "looking at estimated customer lifetime value (LTV)" to "decide whether to keep and develop [a customer]." (Page 2: ¶ 11, lines 1-3; ¶ 12, lines 1-3).

Evaluating customer lifetime value, as mentioned by *Bank Marketing*, does not constitute "calculating a gain in lifetime value for the customer based on a change in . . . [a] hazard function resulting from a retention effort," as recited in claim 1.

According to the Examiner (OA at 16):

> . . . if one evaluates the estimated customer lifetime value and determines that the customer should stay with the organization for development purposes, . . . the result of this evaluation is a gain calculation since the long term value is determined through determining the process of changing from just a traditional acquisition focus to one based on retention *and* acquisition.

Applicants submit that no "gain calculation" would occur in evaluating lifetime value and determining to retain/develop a customer, other than possibly recognizing potential losses from not retaining that customer. Even if evaluating lifetime value and determining to retain a customer amounted to some sort of "gain calculation," such a calculation would not constitute "calculating a gain in lifetime value," as recited in claim 1. Deciding to retain and develop a customer based on that customer's lifetime value does not constitute calculating a <u>gain</u> in the customer's lifetime value based on a change in that customer's hazard function resulting from a retention effort.

Because *Bank Marketing* does not teach or suggest each and every feature of claim 1, as a matter of law, it cannot anticipate this claim. As such, the rejection of claim 1 under 35 U.S.C. §102(b) based on *Bank Marketing* should be withdrawn.

Independent claims 16, although of different scope, includes features similar to those of claim 1 discussed above. In particular, claims 16 recites, *inter alia*:

> a generating module for generating a hazard function for an existing customer, to determine probability of churn, based on the hazard function model and account data associated with the customer and corresponding to the attributes; . . . and

> a calculating module for calculating a gain in lifetime value for the customer based on a change in the hazard function resulting from a retention effort.

Also similar to claim 1, each of independent claim 31 and 46 recites, in part:

> generating a hazard function for an existing customer, to determine probability of churn, based on the hazard function model and account data associated with the customer and corresponding to the attributes . . . and
>
> calculating a gain in lifetime value for the customer based on a change in the hazard function.

For at least the reasons presented above in connection with claim 1, independent claims 16, 31, and 46 are not anticipated by *Bank Marketing*.

Independent claim 61, as currently presented, recites a method, performed by a multilayer feed-forward neural network, including "calculating, for the customer, a gain in lifetime value based on a change in the hazard function resulting from a retention effort." *Bank Marketing* fails to teach or suggest at least the above features. *Bank Marketing* merely mentions, "looking at estimated customer lifetime value (LTV)" to "decide whether to keep and develop [a customer]," which is inconsistent with "calculating, for the customer, a gain in lifetime value based on a change in the hazard function resulting from a retention effort," as claimed. Because *Bank Marketing* does not teach or suggest each and every feature of claim 61, as a matter of law, it cannot anticipate this claim.

Independent claim 63 recites a combination including:

> identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers . . . and
>
> calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort.

The Examiner alleges that *Bank Marketing* discloses "offering lower price, bundled services and dropping a charge" and that this disclosure is consistent with the claimed "identifying."

Applicants disagree. Contrary to the Examiner's position, offering lower prices, bundling services, and dropping charges, as disclosed by *Bank Marketing*, does not constitute a temporal-based retention effort. Further, *Bank Marketing* does not teach or suggest identifying those offerings based on a hazard function. In sum, offering lower prices, bundling services, and dropping charges based on the lifetime value of a customer, as mentioned by *Bank Marketing*, does not constitute "identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers," as claimed.

Moreover, *Bank Marketing* does not teach or suggest "calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort," as claimed. Although the reference mentions lifetime value, it simply does not disclose "calculating . . . an expected gain in value from . . . [an] identified retention effort," as claimed. As *Bank Marketing* does not teach or suggest each and every feature of claim 1, as a matter of law, it cannot anticipate this claim.

Because independent claims 1, 16, 31, 46, 61, and 63 are not anticipated by *Bank Marketing*, the rejection of these claims under 35 U.S.C. § 102(b) should be withdrawn. The rejection of claims 3, 4, 13, 18, 19, 28, 33, 34, 43, 48, 49, 58, 62, 64, and 65 should be withdrawn as well, at least because of the respective dependence of those claims from base claims 1, 16, 31, 46, 61, and 63. Applicants thus request withdrawal of the rejection under 35 U.S.C. § 102(b) and the timely allowance of claims 1, 3, 4, 13, 16, 18, 19, 28, 31, 33, 34, 43, 46, 48, 49, 58, and 61-65.

Rejection of claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65 under 35 U.S.C. § 103(a)

Applicants traverse the rejection of claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65 because a *prima facie* case of obviousness has not been

established with respect to these claims, as currently presented. To establish *prima facie* obviousness under 35 U.S.C. § 103(a), three requirements must be met. First, the applied references, taken alone or in combination, must teach or suggest each and every element recited in the claims. *See* M.P.E.P. § 2143.03 (8th ed. 2001). Second, there must be some suggestion or motivation, either in the reference(s) or in the knowledge generally available to one of ordinary skill in the art, to combine or modify the reference(s) in a manner resulting in the claimed invention. Third, a reasonable expectation of success must exist. Moreover, each of these requirements must "be found in the prior art, and not be based on applicant's disclosure." M.P.E.P. § 2143 (8th ed. 2001).

Despite the Examiner's allegations, Applicants submit that *Canfield* is nonanalogous art and therefore an improper reference against Applicants' claims under 35 U.S.C. § 103(a). *Canfield* is not in the same field of endeavor as Applicants' claimed invention. *Canfield* is directed to reliability theory within the context of maintenance engineering. For example, *Canfield* mentions a hazard function in the context of preventative maintenance on a system. *Canfield* is dissimilar to the claims under examination, which are directed to evaluating customer value to guide loyalty and retention programs. Further, *Canfield* is not reasonably pertinent to the particular problem that the claims address. That is to say, *Canfield,* which is directed to system maintenance and degradation, would not logically have commended itself to an inventor's attention in considering the problems associated with evaluating customer value to guide loyalty and retention programs. The Examiner alleges that in *Canfield*, "when the hazard function changes, this change determines the lifetime value of the system according to if it will degrade with time or not" (OA at 17). Whether or not this allegation is valid, the Examiner has not shown that a reference addressing system maintenance and degradation would have logically

commended itself to an inventor's attention in considering the problems associated with evaluating customer value to guide loyalty and retention programs. The mere fact that *Canfield* mentions a hazard function does not render the reference reasonably pertinent to the particular problem addressed by Applicants' claims. Accordingly, *Canfield* is to be regarded as nonanalogous art and should not be used as a reference against the present claims under 35 U.S.C. § 103(a). For at least this reason, the rejection of claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65 based on *Bank Marketing*, *Sanders*, and *Canfield* should be withdrawn. *Canfield*'s status as nonanalogous art notwithstanding, a *prima facie* case of obviousness has not been established, as discussed below.

Claims 2, 5, 6, 14, and 15 depend from base claim 1; claims 17, 20, 21, 29, and 30 depend from base claim 16; claims 32, 35, 36, 44, and 45 depend from base claim 31; claims 47, 50, 51, 59, and 60 depend from base claim 46, and claims 64 and 65 depend from base claim 63. As explained above, *Bank Marketing* fails to teach or suggest each and every feature of independent claims 1, 16, 31, 46, and 63. *Bank Marketing* therefore fails to teach or suggest each and every feature of dependent claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65.

Further, neither *Sanders* nor *Canfield* (if *Canfield* were a proper reference), nor any combination thereof, cures all of the deficiencies of *Bank Marketing*. For example, neither *Sanders* nor *Canfield* teaches or suggests at least:

> generating a hazard function for an existing customer, to determine probability of churn, based on . . . [a] hazard function model and account data associated with the customer and corresponding to the attributes . . . and
>
> calculating a gain in lifetime value for the customer based on a change in the hazard function . . . .

Sanders and *Canfield* also fail to teach or suggest:

> identifying a temporal-based retention effort based on the hazard function for each of the plurality of customers . . . and
>
> calculating, for each of the plurality of customers, an expected gain in value from the identified retention effort.

Accordingly, neither *Bank Marketing*, *Sanders*, nor *Canfield*, nor any combination thereof, teaches or suggests all of the features recited in claims 1, 16, 31, 46, and 63 and required by dependent claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, 64, and 65. For at least these reasons, a *prima facie* case of obviousness has not been established with respect to claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65.

Moreover, *prima facie* obviousness has not been established with respect to Applicants' claims at least because the requisite motivation to combine *Bank Marketing*, *Sanders*, and *Canfield* is lacking. Determinations of obviousness must be supported by evidence on the record. See *In re Zurko*, 258 F.3d 1379, 1386 (Fed. Cir. 2001) (finding that the factual determinations central to the issue of patentability, including conclusions of obviousness by the Board, must be supported by "substantial evidence"). The desire to combine references must be proved with "substantial evidence" that is a result of a "thorough and searching" factual inquiry. *In re Lee*, 277 F.3d 1338, 1343-1344 (Fed. Cir. 2002) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52).

In this case, the Office Action provides no "substantial evidence" to support the attempted combination of *Bank Marketing*, *Sanders*, and *Canfield*. For example, the Examiner has not shown, by substantial evidence, that a skilled artisan considering the cited references, and not having the benefit of Applicants' disclosure, would have been motivated to combine the references in a manner resulting in Applicants' claimed combination. The Examiner merely provides a description of how *Sanders* and *Canfield* allegedly teach certain features without a

proper motive for combining *Bank Marketing*, *Sanders*, and *Canfield*. The allegations regarding motivation in the Office Action (pages 7-10) are not properly supported by substantial evidence on the record and do not establish the required motivation to combine the references.

M.P.E.P. § 2143 specifies that the requirements for establishing *prima facie* obviousness must "be found in the prior art, and not be based on applicant's disclosure." M.P.E.P. § 2142 (8th ed. 2001). Further M.P.E.P. § 2142 articulates:

> Knowledge of applicant's disclosure must be put aside.... [I]mpermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

Applicants submit that the conclusions in the Office Action were not reached based on facts gleaned from the cited references and that, instead, teachings of the present application were improperly used to reconstruct the prior art. Applicants submit that the conclusions in the Office Action constitute improper hindsight reasoning.

For at least the foregoing reasons, Applicants request withdrawal of the rejection of claims 2, 5, 6, 14, 15, 17, 20, 21, 29, 30, 32, 35, 36, 44, 45, 47, 50, 51, 59, 60, and 63-65 under 35 U.S.C. § 103(a) and the timely allowance of these claims.

Rejection of claims 7-12, 22-27, 37-42, and 52-57 under 35 U.S.C. § 103(a)

Applicants submit that the rejection of claims 7-12, 22-27, 37-42, and 52-57 under 35 U.S.C. § 103(a) should be withdrawn for at least the following reasons.

First, as explained above, *Canfield* is nonanalogous art and therefore cannot properly be combined with *Bank Marketing* or *Sanders*. For at least this reason, the rejection of claims 7-12, 22-27, 37-42, and 52-57 based on *Bank Marketing*, *Canfield*, and *Sanders* should be withdrawn.

Second, *Canfield*'s status as nonanalogous art notwithstanding, a *prima facie* case of obviousness has not been established with respect to claims 7-12, 22-27, 37-42, and 52-57

because *Bank Marketing, Canfield,* and *Sanders* (whether taken alone or in combination) fail to teach or suggest each and every feature of these claims. Claims 7-12 depend from base claim 1; claims 22-27 depend from base claim 16; claims 37-42 depend from base claim 31; and claims 52-57 depend from base claim 46. As explained above, *Bank Marketing* fails to teach or suggest each and every element recited in claims 1, 16, 31, and 46, as currently presented, and neither *Canfield* nor *Sanders* cures its deficiencies. Accordingly, neither *Bank Marketing, Sanders*, nor *Canfield*, nor any combination thereof, teaches or suggests all of the features recited in claims 1, 16, 31, and 46 and required by dependent claims 7-12, 22-27, 37-42, and 52-57. A *prima facie* case of obviousness is lacking for at least this reason.

Third, even if *Bank Marketing, Canfield*, and *Sanders* were properly combinable and all of the features recited in claims 7-12, 22-27, 37-42, and 52-57 could be found in those references—Applicants disputing both notions—the requisite motivation to combine *Bank Marketing, Canfield*, and *Sanders* is lacking. Again, the desire to combine references must be proved with "substantial evidence" that is a result of a "thorough and searching" factual inquiry. *In re Lee*, 277 F.3d 1338, 1343-1344 (Fed. Cir. 2002) (quoting *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52). The Examiner has not shown, by substantial evidence, that a skilled artisan considering the cited references, and not having the benefit of Applicants' disclosure, would have been motivated to combine the references in a manner resulting in Applicants' claimed combination. The Examiner merely provides descriptions of how *Sanders* and *Canfield* allegedly teach certain features without a proper motive for combining *Bank Marketing, Sanders*, and *Canfield.*

For example, the Examiner alleges that a skilled artisan would have combined *Bank Marketing* and *Canfield* to supply "a visual form of determining . . . lifetime value information"

(OA at 11). This statement is not supported by "substantial evidence" on the record, as the Examiner points to no evidence in *Bank Marketing*, *Sanders*, or *Canfield* mentioning such a "visual form of determining...lifetime value information." Further, the Examiner fails to provide any explanation or reasoning to show how combining the references would yield a "visual form of determining...lifetime value information."

The Examiner also alleges that a skilled artisan would have combined *Bank Marketing*, *Canfield*, and *Sanders* to determine "how long a customer will be a customer" and to "[keep] dedicated customers" (OA, page 9). These statements in the Office Action are also not supported by "substantial evidence" on the record and, further, do not establish the requisite motivation to combine the references. Applicants submit that the conclusions in the Office Action relating to motivation were not reached based on facts gleaned from the cited references and that, instead, teachings of the present application were improperly used to reconstruct the prior art. Applicants submit that the conclusions in the Office Action constitute improper hindsight reasoning.

For at least the foregoing reasons, Applicants request withdrawal of the rejection under 35 U.S.C. § 103(a) and the timely allowance of claims 7-12, 22-27, 37-42, and 52-57.

New claims 66-70

New claims 66-70 depend from claims 1, 16, 31, 46, and 61, respectively, and should be allowed for at least reasons similar to those presented above for claims 1, 16, 31, 46, and 61. Further, neither *Bank Marketing*, *Sanders*, nor *Canfield*, nor any combination thereof, teaches or suggests all of the features of new claims 66-70. Applicants therefore request the timely allowance of new claims 66-70.

Conclusion

The claimed invention is neither anticipated nor rendered obvious in view of the references cited against this application. Applicants request the Examiner's reconsideration of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 07-2347.

Respectfully submitted,

Dated: August 24, 2004

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